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### Future time perspective

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## Future Time Perspective: A Systematic Review and Meta-Analysis

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## Future Time Perspective: A Systematic Review and Meta-Analysis

## Abstract

The ability to foresee, anticipate, and plan for future desired outcomes is crucial for well-being, motivation, and behavior. However, theories in organizational psychology do not incorporate time-related constructs such as Future Time Perspective (FTP), and research on FTP remains disjointed and scattered, with different domains focusing on different aspects of the construct, using different measures, and assessing different antecedents and consequences. In this review and meta-analysis, we aim to clarify the FTP construct, advance its theoretical development, and demonstrate its importance by: (a) integrating theory and empirical findings across different domains of research in order to identify major outcomes and antecedents of FTP, and (b) empirically examining whether and how these variables are moderated by FTP measures and dimensions. Results of a meta-analysis of  $k = 212$  studies reveal significant relationships between FTP and major classes of consequences (i.e., those related to achievement, well-being, health behavior, risk behavior, and retirement planning), and between antecedents and FTP, as well as moderating effects of different FTP measures and dimensions. Highlighting the importance of FTP for organizational psychology theories, our findings demonstrate that FTP predicts these outcomes over-and-above the big five personality traits and mediates the associations between these personality traits and outcomes.

*Keywords:* future time perspective; integrative review; meta-analysis; nomological network

### **Future Time Perspective: A Systematic Review and Meta-Analysis**

*“We all have our time machines. Some take us back, they're called memories.*

*Some take us forward, they're called dreams.” (Irons, 1948).*

Time surrounds and embeds all human behavior (McGrath & Kelly, 1992). Time provides individuals with a benchmark for orienting the self in the midst of myriad ongoing activities in work and non-work life roles, such as learning, task performance, and parenting. Time also provides individuals with a point of reference (Mohammed & Nadkarni, 2011; Ringle & Savickas, 1983) and a salient metric by which to organize, construct, retrieve, and interpret past, present, and anticipated future experiences. Recently, Sonnentag (2012) identified four ways by which to incorporate temporal perspectives in organizational research: (1) investigating temporal processes over time, (2) specifying meaningful units of time in lagged research, (3) including contextual variables that capture time-linked features of the environment (e.g., historical or economic variables), and (4) examining constructs related to the individual's experience of past, present, and future time (e.g., work biographies, flow, future selves).

Research findings on the subjective experience of time show that an individual's temporal perspective may shift depending on person or situational factors. For example, as a person moves through time-bounded tasks, events, and activities (e.g., schoolwork, job tasks, childbirth), absolute time and the experience of time may disassociate (Kastenbaum, 1982; Wallace & Rabin, 1960). Research findings by Csikszentmihalyi and colleagues (1990) show that perceptions of time are often prolonged during flow states. Similarly, although human aging involves a continual increase in experienced time and a continual decrease in remaining future time, an older individual's experience of time may yield judgments of a short past or a long

future. These experiences are reflected in the concept of future time perspective (FTP), which Lewin (1951, p.75) broadly defined as “the totality of the individual’s views of his psychological future and psychological past existing at a given time.”

Multiple conceptualizations of the experience of time have been proposed since Lewin’s broad definition in 1951. Research findings show that past, present, and future perspectives are distinct, and that an individual lower on FTP is not necessarily higher on past or present time perspective (Cate & John, 2007; Joireman, Balliet, Sprott, Spangenberg, & Schultz, 2008; Zimbardo & Boyd, 1999). Over the past few decades, social-cognitive and goal-based theories of motivation have highlighted the role of one’s anticipated future as a fundamental determinant of action (Bandura, 1986). In this perspective, the individual’s experience of future time is posited to play a major role in shaping the goals, plans, and self-regulatory activities that govern action and outcomes with respect to achievement, adjustment, and well-being. Findings by Carstensen (1995), Crotty (2008), Henry, Zacher, and Desmette (2017), and others (e.g., Joireman, Kamdar, Daniels, & Duell, 2006; Strauss, Griffin, & Parker, 2012; Zacher, Heausner, Schmitz, Zwierzanska, & Frese, 2010; Zimbardo & Boyd, 1999) show that the experience of future time also affects a number of key outcomes in work and educational settings, including job performance, proactive work behaviors, school performance, mental health/affective experiences, physical exercise, substance use, and risk behaviors. In an era of globalization, increased competition, and uncertainty (Gagné & Bhave, 2011), the influence of the experience of future time on worker well-being is of growing importance for human resource managers concerned with reducing worker stress and maximizing productivity. For example, FTP has been shown to influence mental disorders and substance use, which in turn affect job performance and work-loss (Kessler, Greenberg, Mickelson, Meneades, & Wang, 2001). Consistent with these

research findings in industrial and organizational (I/O) and developmental psychology (e.g., Baltes, Wynne, Sirabian, Krenn, & De Lange, 2014; Carstensen, 2006; Henry et al., 2017; Strauss et al., 2012), this study focuses on *future* time perspective in order to extend our knowledge about the factors that most contribute to the motivation, modulation, and consequences of purposive, goal-directed activities.

Two obstacles confront the advancement of research and theory on FTP. First, studies to date investigating the role of FTP have not been well-integrated across programs of research or within broader perspectives on motivation and self-regulation. Different approaches have focused on distinctive dimensions of the FTP construct (e.g., orientation or continuity), resulting in different conceptualizations and operationalizations of the construct (see Wallace & Rabin, 1960). This diversity in approaches often leads to inconsistent and contradictory empirical findings (Seijts, 1998). For example, Adams and Nettle (2009) found that associations between FTP and health behaviors and outcomes (e.g., frequency of physical activity, BMI) were highly dependent on how FTP was operationalized. In a related vein, FTP research has taken place across historically disparate sub-disciplines of applied psychology (e.g., organizational, health, and educational psychology). Although cross-domain findings indicate that FTP is related to several narrow yet important outcomes (e.g., proactive work behaviors and risk behaviors), the lack of a common framework does not readily permit an evaluation of the accumulated research literature, or identification of important research gaps.

A second obstacle to advancing research and theory on FTP pertains to the lack of an integrative approach for understanding FTP's role in the broader nomological network of constructs that govern well-being, motivation, and behavior (Baltes et al., 2014; Carstensen, 1995; Zimbardo & Boyd, 1999). For example, research investigating the antecedents of FTP

often includes individual differences in traits, but we lack knowledge on the incremental effects of FTP above and beyond these traits on outcomes, or whether FTP potentially mediates the relationships between these traits and key behaviors and outcomes. An integrative approach is therefore needed to provide a more in-depth understanding of FTP and the nature of relationships among antecedents and consequences of FTP across behavioral domains, as well as the extent to which FTP provides unique knowledge in the prediction of well-being, motivation, and behavior.

Our study contributes to the field in two important ways. First, we clarify the FTP construct by coordinating historically disparate and diverse FTP theories and research within a motivationally-based framework that delineates the relationships between broad, trait-based individual differences, FTP, behaviors, and outcomes. We conceptualize FTP as a malleable, cognitive-motivational construct that focuses on an individual's tendency to anticipate and structure one's future, and differentiate FTP from personality, affective, and agentic traits that capture how an individual tends to experience situations and respond to them affectively and behaviorally. We employ this framework to examine the antecedents and consequences of FTP and whether differences in approaches to studying FTP actually matter by using meta-analytic procedures and by testing the moderating effects of FTP measures and dimensions in the association of FTP with antecedents and consequences. Second, we demonstrate the contribution of FTP to various outcomes by testing the incremental validity of FTP beyond trait factors. Our framework suggests that FTP is an important construct in addition to personality traits, and may function as an important link in the relationships between personality traits and individual motivation and behavior.

Our research seeks to answer four specific questions: (1) What is the association between FTP variables and key aspects of well-being, motivation, and behavior? (2) What is the

relationship between contextual and other person variables and FTP? (3) To what extent do differences in FTP measures and dimensionality, and sample type moderate FTP – outcome, and antecedent – FTP relationships? Finally, (4) how does FTP fit within the nomological network of constructs that predict well-being, motivation, and behavior? To accomplish these goals, we begin by coordinating diverse theory and research on different aspects of FTP and work-relevant outcomes. Because longitudinal research specifying the antecedents and outcomes of FTP is limited, we classify our variables into antecedents and outcomes and identify major factor groupings in each category rationally based on a review of prior theorizing and empirical evidence. Specifically, we organize outcomes into five distinct content clusters: achievement, well-being, health behavior, risk taking, and retirement planning. We likewise identify and organize FTP antecedents into three broad variable groupings: socio-demographic factors (e.g., age), individual differences in broad affective and personality traits (e.g., conscientiousness), and agentic traits related to the self (e.g., self-efficacy). Using this framework, we conduct moderator analyses to determine whether differences in FTP measures and the dimensions studied account for meaningful differences in the explanation of various outcomes, and the relationship between antecedents and FTP. Finally, we quantitatively examine the importance of FTP for various outcome classes by testing the incremental validity of FTP above and beyond that provided by personality traits.

### **Conceptualizing Future Time Perspective**

**FTP content.** Similar to other psychological constructs (e.g., goal orientation), researchers have conceptualized FTP as both a relatively stable inter-individual differences trait and a malleable state. In one of the earliest trait views on FTP, Gjesme (1983) proposed that FTP pertains to individual differences in the general capacity to anticipate, shed light on, and structure



one's future. Gjesme (1983) argued that individual differences in this trait developed gradually through early adulthood, and that trait FTP is aroused and manifested as a function of the anticipated importance of future tasks, events, or activities. Zimbardo and Boyd (1999) and Strathman Gleicher, Boninger, and Edwards (1994) subsequently described FTP as a relatively stable trait. For example, Strathman et al. (1994, p. 743) defined the construct as "...the extent to which individuals consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes." In contrast to trait views, early state conceptions emphasized the componential structure and content of cognitive processing related to time. Wallace (1956; Wallace & Rabin, 1960, p. 229), for example, defined FTP as "...the timing and ordering of personalized future events..." – a definition that highlights cognitive organizational processes. Similarly, Trommsdorff and Lamm (1975 p. 343) described FTP in terms of cognitive content, and defined the construct as "a set of subjective expectations and beliefs held by a person about his future."

Although FTP can be conceptualized both as a trait and as a state, we argue that FTP is different from personality, affective, and agentic traits in two ways. First, most personality and agentic traits are defined as individual differences in behavioral tendencies in situations, whereas FTP is not about individual differences in behavior *per se*, but rather about individual differences in cognitive orientations. Second, individual differences in affective traits generally refer to differences in feelings and reactions to those feelings, but not to differences in cognitions about the future. Thus, we agree with Seijts (1998), who has argued that FTP is best conceptualized as a malleable cognitive structure, rather than as a state or a trait. His argument is based on findings from three lines of research: (1) evidence showing that the ability to extend the perception of time into both the past and the future improves with age through late adolescence, (2) evidence

for the positive impact of treatment programs on FTP among drug addicts, and (3) studies documenting the influence of an individual's socialization process in society and/or specific social classes and groups on FTP. More recent definitions of FTP by Carstensen (2006) and Cate and John (2007) follow this view of FTP as a malleable, cognitive-motivational construct that develops and changes as a function of experience over the lifespan.

**FTP Dimensionality.** A second interpretative issue pertains to which features of FTP are highlighted (De Volder & Lens, 1982; Husman & Lens, 1999; Trommsdorff, 1983). Scholars who focus on the cognitive aspect of FTP have distinguished five dimensions: time orientation, extension, continuity, density, and directionality (Husman & Shell, 2008; Ringle & Savickas, 1983; Seijts, 1998). Time orientation (Gjesme, 1979) refers to a predominant orientation or focus on the past, present, or future (Nuttin & Lens, 1985). FTP particularly involves a future orientation. In contrast to Hofstede's (2001) notion of future orientation as a cultural value, FTP refers to a cognitive structure. Extension refers to the conceptualized length of future time span (i.e., how far into the future people project; Ringle & Savickas, 1983). Continuity (also referred to as coherence, perceived instrumentality, or integration) refers to the extent to which an individual anticipates both the immediate effects and long-term consequences of a potential action (De Volder & Lens, 1982). Continuity is also related to planning and individuals' beliefs regarding the ability of their present efforts to influence future outcomes (Husman & Lens, 1999). Density (or clarity) refers to the number of goals or motivational objects that an individual plans to obtain in the future (Husman & Lens, 1999) and to the level of detail within individuals' perceptions of the future (Ringle & Savickas, 1983). Finally, directionality refers to the extent to which one perceives him/herself as moving forward from the present moment into the future.

Other researchers have emphasized the affective features (i.e., affectivity, or the emotional valence) of future events (De Volder & Lens, 1982; Ringle & Savickas, 1983). These perspectives posit that the future is viewed either optimistically, with a sense of confidence in the achievement of future goals, or as somewhat threatening (Ringle & Savickas, 1983). Higher affectivity also reflects the attachment of higher value to goals, even if they can only be reached in a more distant future (De Volder & Lens, 1982). The importance of goals in these conceptualizations is highlighted by Mischel (1961), who defined the preference for a larger, temporally distant reward in comparison to a smaller, immediately available reward as “delay of gratification.” In this context, affectivity refers to the valence of the conceived future and not to broad dispositional tendencies to experience positive or negative affect.

In summary, there remains considerable inconsistency in the way that FTP is conceptualized, the dimensionality of the construct, and the way that the construct is assessed. Despite these inconsistencies, there is broad agreement that FTP reflects a general focus on, and deliberation regarding the future. Thus, for present purposes we define FTP as *a general concern for and corresponding consideration of one’s future*. As such, FTP is a self-contextualizing (i.e., situationally determined; Zimbardo & Boyd, 1999), flexible, and cognitive-motivational construct (Zacher & Frese, 2009) that is distinct from more normative personality trait constructs. Consistent with our definition and most FTP studies, we focus on the three dimensions that most clearly reflect this general concern for and consideration of the future, namely future orientation, continuity, and affectivity.

### **Future Time Perspective Outcomes**

Our review of the literature reveals a sizable body of research on the relationship between FTP (i.e., particularly future orientation, continuity, and affectivity dimensions), and five broad

outcome classes that relate to well-being and involve the execution of purposive, goal-directed behaviors: achievement, well-being, health behavior, risk taking behavior, and retirement planning<sup>1</sup>.

**Achievement-related outcomes.** Outcomes in this category refer to behaviors, activities, and consequences that reflect an individual's motivation and performance in the context of major life roles, such as a student or employee. Drawing from Nuttin's FTP theory (Nuttin, 1964), we propose that an individual's FTP influences the perceived instrumentality of their actions and the valence of future outcomes. FTP theory distinguishes between cognitive and affective aspects of FTP (e.g., De Volder & Lens, 1982). These aspects correspond closely to two key psychological mechanisms that underlie the initiation and direction of action: valence and expectancy (e.g., Vroom, 1964). More particularly, individuals higher on the affectivity dimension of FTP are posited to show stronger preference for future outcomes and to attach greater value to future events. The FTP continuity dimension (i.e., the perceived instrumentality of current effort to achieve future outcomes) and future orientation dimension (i.e., the ability to think about the future) map closely to the expectancy construct. Since individuals higher<sup>2</sup> on FTP are likely to think about their future, believe that their current behavior will lead to future goal attainment, and to value these future goals, higher levels of FTP are posited to promote higher levels of motivation.

This coordination of FTP into motivated action is consistent with social-cognitive theorizing by Bandura (2006). According to social cognitive theory (SCT), beliefs about one's

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<sup>1</sup> Because Milfont, Wilson, and Diniz (2012) recently published a meta-analysis that detailed the association between future time perspective and environmental attitudes and behaviors we do not include these outcome variables in the present review.

<sup>2</sup> We use the terminology "higher" versus "lower" future time perspective throughout the paper, which refers to a longer future time perspective, future orientation etc., depending on the dimension of future time perspective that is emphasized.

capabilities to exercise control over events (i.e., related to the continuity dimension) and the ability to think about the future (i.e., related to future orientation) represent the core properties of human agency. From an SCT perspective, FTP affects the goals that individuals set for themselves, the consequences that individuals anticipate for various courses of action, and the choices and planning processes that individuals use to achieve desired outcomes; thinking about the future allows people to motivate themselves and guide their actions in anticipation of future events (Janeiro, 2010). Similarly, Miller and Brickman (2004) and others (e.g., Bembenuddy & Karabenick, 2004) propose that anticipating future outcomes is an important self-regulatory factor in human functioning; by setting proximal subgoals, individuals self-regulate and link their current efforts to the attainment of valuable distal goals.

Findings in the educational psychology domain support this coordination, showing positive relationships between FTP and motivation, conceptual learning, performance, and persistence (Simon, 2004), time spent studying (Peetsma, 1994), and use of better learning strategies (e.g., Bembenuddy & Karabenich, 2004; De Bilde, Vansteenkiste, & Lens, 2011; Husman & Lens, 1999). Thus, we hypothesize that FTP will have a positive relationship with achievement-related outcomes, such as academic achievement (i.e., GPA), and expect that all three FTP dimensions will be positively related to these outcomes.

*Hypothesis 1:* Future time perspective is positively related to achievement-related outcomes.

**Well-being.** Well-being typically refers to a wide array of outcome variables that reflect aspects of socioemotional health and psychological adjustment. Indices of well-being that have been studied in conjunction with FTP include happiness, life satisfaction, subjective general health, anxiety, and depression. Theorizing from De Volder and Lens (1982) proposes that FTP

relates to the emotional valence of future events; individuals with a higher FTP also report a more optimistic view of the future and greater confidence in achieving future goals than individuals with a lower FTP. The anticipation of attaining valued goals in the future, in turn, has been shown to have salutary effects on mental health (Prenda & Lachman, 2001). Based on these theories and findings, we hypothesize that FTP will show a positive association with positive indices of well-being (e.g., happiness) and a negative association with negative indices of well-being (e.g., anxiety). As Shipp, Edwards, and Lambert (2009) suggest, individuals lower on FTP maintain a less clear and more pessimistic view of their future, that in turn, leads to increased worry about an unpredictable future and increased feelings of anxiety. In addition, individuals who report lower FTP are more likely to dwell on past failures and disappointments than individuals who report higher FTP (Shipp et al., 2009). In summary, we expect that FTP, and particularly its affectivity dimension, will be related to well-being.

*Hypothesis 2a.* FTP is positively associated with happiness, life satisfaction, and subjective health.

*Hypothesis 2b.* FTP is negatively associated with anxiety and depression.

**Health behavior.** Outcomes in this category refer to physical behaviors (i.e., exercise) and substance use. Consistent with social cognitive theories, individuals higher on FTP are posited to more fully anticipate the likely consequences of their actions and to recognize the instrumental link between certain immediate behaviors and the attainment of future benefits, even if immediate outcomes are relatively undesirable, or there are immediate costs (Strathman et al., 1994). As a result, individuals who score higher on FTP are expected to engage in health promotion related behaviors. Zimbardo's early work focused on substance use, such as alcohol and drugs (e.g., Keough, Zimbardo, & Boyd, 1999). Zimbardo and his colleagues proposed that

individuals higher on FTP make decisions based on cost/benefit analyses resulting from the consideration of abstract options and contingencies (Zimbardo et al., 1997). Compared to individuals with lower FTP, individuals higher on FTP are more likely to foresee the negative future consequences of using drugs and alcohol, and are thus less likely to engage in substance use (Keough et al., 1999). Similarly, Joireman, Shaffer, Balliet, and Strathman (2012) argue that individuals higher on FTP think more about the impact of their current actions on future experiences and the potential long-term consequences of their behaviors (Kees, 2011; Wininger & DeSena, 2012). Consequently, compared to individuals lower on FTP, these individuals are more likely to engage in healthy behaviors, such as less substance use and greater physical exercise (Adams & Nettle, 2009; Yarcheski, Mahon, Yarcheski, & Cannella, 2004). As such, we expect that particularly the continuity dimension of FTP will be related to health behaviors.

Accordingly, we hypothesize:

*Hypothesis 3:* Future time perspective is positively associated with physical health-related behaviors (i.e., lack of substance use and physical exercise).

**Risk taking.** Social cognitive and FTP theorists posit that individuals who report higher FTP are more likely to anticipate the consequences of their actions. Zimbardo et al. (1997) elaborate this view to suggest that when making decisions, individuals who hold a higher FTP are more likely to consider both negative as well as positive effects and long-term consequences of their potential actions. Zimbardo's early work on the relationship between FTP and risky driving provides support for this notion (e.g., Zimbardo et al., 1997). Broadening this rationale, we hypothesize that because individuals with higher FTP consider the potential negative consequences of risk behaviors, these individuals are less likely to exhibit or report risk

behaviors, compared with individuals who score lower on FTP. As such, we expect that particularly the continuity dimension of FTP will be related to risk taking-related behaviors.

*Hypothesis 4:* Future time perspective is negatively associated with risk taking-related behaviors and outcomes.

**Retirement planning.** FTP has also been studied in relation to retirement planning. Although the retirement transition process typically occurs during later adulthood, individual differences in FTP among older individuals have been argued to relate to the nature and quality of retirement planning outcomes, such as financial knowledge (Hershey & Mowen, 2000). In this literature, FTP is assumed to influence planning behavior, because this type of future-focused behavior requires the ability to think far into the future (i.e., future orientation; Hershey & Mowen, 2000; Jacobs-Lawson & Hershey, 2005). In this context, financial knowledge refers to the extent of sufficient and accurate financial knowledge with respect to retirement (Jacobs-Lawson & Hershey, 2005), and reflects a mediating role in the relationship between FTP and other retirement planning activities (Hershey & Mowen, 2000). Individuals who are higher on FTP, and particularly on future orientation, are posited to be more likely to plan for retirement. Thus, we expect that such persons will also possess greater knowledge related to retirement processes compared to persons lower on FTP.

*Hypothesis 5:* Future time perspective is positively associated with retirement planning-related outcomes (i.e., financial knowledge).

### **Antecedents of Future Time Perspective**

A second important question in the FTP literature pertains to understanding the associations between FTP and psychological and non-psychological antecedent variables. Using a cognitive-motivational framework to rationally organize FTP antecedents, our review of the



literature led us to identify three broad antecedent classes: (1) non-psychological variables, including biographical and socio-demographic characteristics, (2) broad, cross-situational personality and affective traits implicated in the development of approach-oriented goals and self-regulatory processes, and (3) broad, cross-situational agentic traits related to the self.

**Socio-demographic factors.** Broad interest in FTP across disciplinary domains has spurred attention toward identifying socio-demographic antecedents of FTP (e.g., Lessing, 1968; Padawer, Jacobs-Lawson, Hershey, & Thomas, 2007). Our review revealed sufficient evidence on the relationship between FTP and three socio-demographic variables: age, gender, and socioeconomic status.

**Age.** Several studies have examined chronological age and psychological time concepts in terms of the development of future time orientation during childhood and adolescence (e.g., Wallace & Rabin, 1960, Klineberg, 1967; Teuscher & Mitchell, 2011). Studies with these age groups show an increasing future time orientation over time. For example, Green, Myerson and colleagues (1994; 1996) found that the rate at which young adults discounted the value of delayed rewards decreased with age. Other studies investigating trends in adult development over longer time frames suggest that future orientation decreases over the adult lifespan (Lang & Carstensen, 2002; Lomranz, Friedman, Gitter, Shmotkin, & Medini, 1985; Neugarten, 1968; Nuttin & Lens, 1985). These authors propose an age-related linear shift in FTP, yielding a shorter and more limited concept of future time in later adulthood. In the aggregate, however, research findings at different points in the lifespan suggest the possibility of a curvilinear trend in FTP; increasing during adolescence and then gradually decreasing after midlife.

*Hypothesis 6:* Future time perspective will show a curvilinear, inverted U-shaped relationship with chronological age.

**Gender.** Research findings on gender – FTP relationships are less consistent than those for age (Ely & Mercurio, 2011). Early research consistently shows gender differences in both the type and density of adolescent future goals (see Nurmi, 1991; Trommsdorff, 1994). More recent studies have found gender differences in extension and density dimensions of adolescent future goals, with men reporting thoughts that extend further into the future, but women reporting more future goals (Greene & DeBacker, 2004). In line with sex role differences, men's future goals tend to focus more on career-related issues whereas women have more diverse goals related to work, family, and leisure. Based on these findings, we choose to explore the gender – FTP relationship further rather than to hypothesize any specific association.

**Socioeconomic status.** Early research findings showed positive associations of FTP with socioeconomic status (SES) as indicated by family income and level of education (Padawer et al., 2007). Nurmi (1987) suggests that individuals in higher social classes envision longer futures, because principal developmental tasks are more likely to be actualized at later life stages compared to those in lower social classes. Ferrari et al. (2010) also suggest that higher SES children are more likely to benefit from family discussions that direct their attention toward the future. Similarly, Ely and Mercurio (2011) found that family socialization (i.e., parent – child discourses) had a significant effect on shaping perceptions of time. Based on this literature, we expect a positive association between FTP and SES.

*Hypothesis 7: SES is positively associated with future time perspective.*

**Affective and personality traits.** Numerous findings in the work motivation and performance literature document the role of broad affective and personality traits in decision making and goal pursuit (Elliott, 1999; Kanfer, 2012). Social cognitive theories propose that individuals attain their goals through self-regulatory strategies. Building on Higgins' (1997) self-

regulatory focus theory, we propose a positive relationship between promotion focus and FTP (e.g., Kooij, Bal, & Kanfer, 2014). Individuals who are promotion-focused typically highlight gains, future aspirations, and accomplishments. Hence, we expect that a strong promotion focus characterized by ideals, approach as a strategic means, positive outcomes, and cheerfulness (Higgins, 1997), will be associated with higher FTP, and particularly with its future orientation and affectivity dimensions. Since individuals who are conscientious, extraverted, open to new experiences, hopeful, and optimistic can be characterized as self-disciplined, achievement oriented, imaginative, broad-minded, assertive, and ambitious, they are more likely to self-regulate by focusing on promotion (e.g., Hoyle, 2006; Van Vianen, Klehe, Koen, & Dries, 2012), and to report higher levels of FTP. On the other hand, individuals who are less emotionally stable and who experience negative moods are more focused on punishments, failures, and wrongdoings. Such individuals are less likely to self-regulate by focusing on promotion (e.g., Gorman, Meriac, Overstreet et al., 2012), and are thus likely to have lower FTP.

*Hypothesis 8a:* Agreeableness, openness, extraversion, conscientiousness, positive affectivity, hope, and optimism are positively associated with future time perspective.

*Hypothesis 8b:* Neuroticism (low emotional stability) and negative affectivity are negatively associated with future time perspective.

**Agentic traits.** Agentic traits refer to a subjective sense of potency for accomplishing one's goals (Morrone-Strupinsky & Depue, 2004). Building on SCT (Bandura, 2006), we propose that agentic traits are positively associated with FTP, and particularly its continuity dimension. SCT (Bandura, 2006, p. 1175) proposes that "among the mechanisms of personal agency, none is more central or pervasive than people's beliefs about their capabilities to exercise control over events that affect their lives". Such agentic traits influence the types of anticipatory

scenarios that individuals construct, and individuals with higher agentic traits are more likely to envision successful scenarios. Since individuals with higher internal locus of control, self-efficacy, and self-esteem believe that their own behavior can lead to desired outcomes, they set goals and make plans to reach them (Shipp et al., 2009). As such, they anticipate long-term consequences of a potential action, suggesting a positive association between agentic traits and FTP. Similarly, Shipp et al. (2009) argue that agentic traits are associated to FTP through their positive influence on goal pursuit. Individuals who expect that they can influence their life circumstances are more likely to set goals and plan to reach desired outcomes, resulting in a higher FTP.

*Hypothesis 9:* Agentic traits (i.e., locus of control, self-efficacy, and self-esteem) are positively associated with future time perspective.

### **Incremental and Mediating Effects of Future Time Perspective.**

In addition to hypotheses concerning the relationships of FTP and its dimensions with antecedent and outcome variables, our conceptualization of FTP as a cognitive-motivational construct suggests that FTP makes a unique contribution to the prediction of outcomes above and beyond well-studied dispositional antecedent variables, such as the “big five” personality traits (Digman, 1990).

*Hypothesis 10:* Future time perspective predicts achievement, well-being, health behavior, risk taking, and retirement planning outcomes above and beyond the effects of the big five personality traits.

Moreover, we expect that big five personality traits will have an indirect effect on these outcomes through their effects on FTP. Existing research has convincingly shown that these personality traits are positively associated with achievement, health behaviors, well-being, risk

taking, and retirement planning outcomes (e.g., Kotov, Gamez, Schmidt, & Watson, 2010; Poropat, 2009; Stajkovic & Luthans, 1998). Based on theorizing and research findings outlined previously, we propose that FTP plays a mediating role in these associations. For example, more conscientious individuals might perform better at work (e.g., Barrick, Mount, & Judge, 2001; Chamorro-Premuzic & Furnham, 2003) because they focus on, or envision the future, leading to the development of motivating future goals. Similarly, less neurotic individuals might report higher levels of well-being (e.g., Langelan, Bakker, Van Doornen, & Schaufeli, 2006) because they are more optimistic about their future, which has a salutary effect on mental health. As such, FTP is proposed to play a key role in the pathway by which personality trait levels influence motivation, behavior, and adjustment, functioning as a cognitive-motivational construct that translates personality into adjustment and behavior.

*Hypothesis 11:* Future time perspective mediates the positive relationship between the big five personality traits and achievement, well-being, health behavior, risk taking, and retirement planning outcomes.

## **Method**

### **Literature Search**

We began our literature search by creating a preliminary list of search terms, including future time perspective, future orientation, consideration of future consequences, and time orientation. Using these terms, we conducted an extensive electronic search of the following databases across a period of 65 years (i.e., January 1950 through December 2015): EBSCO, PsycINFO, Web of Science, Science Direct, Google Scholar, Business Source Complete, Education Resources Information Center, PsycARTICLES, Psychology and Behavioral Sciences Collection, Sociological Collection, MEDLINE, and Dissertation Abstracts. We also iteratively

searched the references of articles and papers selected for inclusion in the meta-analysis until no new articles or papers were identified. Finally, we carefully reviewed the references from previous review papers (e.g., Husman & Lens, 1999) and meta-analyses (e.g., Yarcheski et al., 2004) for additional possible citations. All identified references were imported into a spreadsheet for screening and classification.

### **Inclusion Criteria and Coding of Studies**

For study findings to be included in the meta-analysis, the study had to meet all of the following criteria: (1) Includes at least one of the following general measures of future time perspective: Future Time Perspective scale (C&L; Carstensen & Lang, 1996); Future Time Orientation scale (FTO; Gjesme, 1975; 1979); future subscale of the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo, 1990; Zimbardo et al., 1997); Consideration of Future Consequences scale (CFC; Strathman et al., 1994); Achievability of Future Goals Scale (AFGS; Heimberg, 1963); Future Time Perspective scale (H&M; Hershey & Mowen, 2000); or Long-Term Personal Direction Scale (LTPDS; Wessman, 1973), including short forms of these measures, (2) reports results of an empirical study, (3) reports the raw correlation between FTP and at least one other variable, and (4) reports findings in the English language. We only included variables for which five or more samples were available (See also Riketta, 2008). Studies were also included if they reported an outcome statistic that allowed for a computation of a correlation coefficient (e.g., Fung et al., 2001), using one of these formulas:  $r_{Y1} = \sqrt{(t^2 / (t^2 + df))}$ ,  $r_{Y1} = \sqrt{(F / (F + dfd))}$  (if  $dfn = 1$ ) or  $r_{Y1} = \sqrt{(dfn F / (dfn F + dfd))}$  (if  $dfn > 1$ ) where  $dfn$  = degrees of freedom for the numerator and  $dfd$  = degrees of freedom for the denominator. We did not include modified or domain-specific forms of measures (e.g., Zacher & Frese, 2009).

Our initial search yielded 815 potentially relevant empirical articles based on title and abstract screening. Of these articles, 165 articles ( $k = 212$  studies<sup>3</sup>) met all four inclusion criteria, and were coded for the meta-analysis. The 212 studies primarily consisted of empirical peer-reviewed articles (99.5%) published between 1963 and 2015 (84.9% after 2000). Fifty percent of all studies included in the meta-analysis were conducted in the United States, 35% in Europe, 6% in Asia, and 10% in other parts of the world. Fifty-four percent of the studies included a sample of students, 32% used a general population, 10% used employees, and 4% used a specific type of sample, such as gamblers or homeless people. With respect to lifespan stage, 55% were adolescents, 38% were adults, 5% were older adults, 1% were younger and older adults, and 2% were children. Most of the studies used the ZTPI (44%) to measure FTP, followed by the CFC (26%), the C&L scale (18%), the FPTI (4%), the H&M scale (4%), the LTPDS (3%), and the FTO (1%). The mean age of the total sample was 32.5 years old (based on  $k = 167$  studies that reported mean age;  $SD = 15.4$  years), with mean age ranging from 11.3 years old to 78.6 years old. The average percentage of male respondents in the total sample was 43.6% (based on  $k = 194$  studies that reported this percentage,  $SD = 17.1$ , ranging from 0 to 100).

Studies included in the meta-analysis were coded by the first author, second author, and a research assistant for the following key features: reference information, type of publication (i.e., published or unpublished study), study design (i.e., cross-sectional or longitudinal), study location, sample type, sample type by age grouping (i.e., children, adolescents, adults, or older adults), sample characteristics (i.e., size, gender, and average age), FTP measure used and associated reliability coefficient, other variables measured, their measurement instruments and

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<sup>3</sup> An appendix reporting each individual study, including study details, reliability information, and effect sizes is available as supplemental materials and from the corresponding author

associated reliability coefficients, and the effect sizes. Coders held discussions through email about coding, but there were no disagreements.

## Measures

**Future time perspective.** We included measures of FTP that were most frequently used in the literature. Table 1 displays a list of these measures of FTP, including each measure's conceptualization, FTP dimensions, mean reliability coefficient used in the meta-analysis, and example items<sup>4</sup>.

- Insert Table 1 about here -

**Moderators.** We examined two construct-related (i.e., measure type and FTP dimension) and one exogenous (i.e., life stage of the sample) moderators of FTP relationships. First, because FTP is assessed with different *measures* that provide different conceptualizations of the construct and its relationships with other variables, we will examine whether the effect sizes of such relationships differ for the various FTP measures used. Second, we identified and coded the sub-dimensions assessed by each measure, based on the conceptualization of and the items used for each measure (see Table 1, column 4) to examine the potential moderating effect of FTP dimension (Seijts, 1998; Adams, 2009). Of note, although the Carstensen and Lang (1996) scale refers to both extension and affectivity, most items refer to opportunities and limitations; we therefore categorized this as a measure of affectivity. Finally, since several studies focus on specific *samples* (i.e., adolescents or older adults), we examined the moderating role of sample type in terms of lifespan stage (i.e., adolescents, adults, or older adults).

## Meta-analyses

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<sup>4</sup> An appendix reporting descriptive statistics for antecedent and outcome variables including representative measures and example items is available as supplemental materials and from the corresponding author.



To synthesize findings from the studies included in our review, we conducted meta-analyses of the correlations between FTP measures and the other variables outlined above. We employed the following procedure: (1) correlations of variables derived from a single study that referred to the same overall variable (e.g., risk taking and risk behavior) were combined using Hunter and Schmidt's (2004) composite formulae, except in those cases where the needed intercorrelation between the two correlates (e.g., risk taking and risk behavior) was not available. In those cases, the average correlation was taken instead as a conservative estimate of the composite association; (2) if an outcome (either FTP or another variable) was measured at multiple time points (i.e., a multi-wave or longitudinal study design), the correlations between Time 1 and Time 2 were selected for the analysis to decrease common-method bias; (3) each correlation was also corrected for measurement error (i.e., as it represents a statistical artifact; see Hunter & Schmidt, 2004). Wherever reliabilities were not reported, we used the average reliability for that variable across all samples that were included in the meta-analysis that reported the reliability for the focal variable (i.e., only if at least three studies reported such a reliability; see the alpha coefficients in Tables 3 and 4); (4) each correlation was also corrected for sampling error (i.e., as sampling error also represents a statistical artifact; see Hunter & Schmidt, 2004) using the inverse variance weighting approach (Lipsey & Wilson, 2001). This technique resulted in mean, inverse variance weighted and reliability corrected correlations, which we will refer to as the mean correlation, or effect size rho, ' $\rho$ '; finally, (5) we examined possible moderating variables that might explain variation in these effect sizes.

The meta-analyses were performed in SPSS using the syntax written by Lipsey and Wilson (2001; available on David Wilson's website <http://mason.gmu.edu/~dwilsonb/ma.html>). This syntax, based on the procedures outlined by Hedges and Olkin (1985), calculates inverse

variance weighted mean effect sizes and estimates a homogeneity statistic ( $Q_w$ ).  $Q_w$  uses a distribution similar to a chi-square with  $k - 1$  degrees of freedom, where  $k$  is the number of effect sizes (i.e., samples), and indicates whether the variance in effect sizes is no greater than what would be expected by sampling error. Random effects models were used for all analyses, because of the significant heterogeneity found in the results, which we believed was not due to sampling error alone (i.e., given the diverse characteristics of the studies, as we described in the Methods section).

In the absence of homogeneity, we examined whether our moderators accounted for variability among effect sizes. In this type of analysis, the inverse of the variance of the effect size being predicted is used as a weight, and the significance of the moderators of interest is determined by examining the significance of the  $Q_b$ , which is a sums of squares value comparable to an  $F$  ratio, but is distributed similarly to a chi-square with  $m - 1$  degrees of freedom, where  $m$  is the number of subgroups of the moderator. For the subgroup analyses, we used the cut-off criterion of at least  $k = 3$  samples (see also Kooij, De Lange, Jansen, Kanfer, & Dikkers, 2011). These analyses were also performed with Lipsey and Wilson's (2001) SPSS macros.

To test the incremental and mediating effects of FTP we followed best practices (see Bergh et al., 2016; Viswesvaran & Ones, 1995), and employed the following procedure involving four steps. First, the zero-order meta-analytic relationships between FTP and the outcome variables, as well as zero-order meta-analytic relationships between big five traits and FTP were estimated as part of our primary meta-analysis. Second, available meta-analytic relationships between big five traits and outcome variables were located through exhaustive literature searches. To ensure the comparability of the estimates observed from our primary

meta-analysis with those obtained from the literature, we only considered published meta-analyses that were also based upon comprehensive literature searches and that reported meta-analytic correlations between each of the big five traits and the outcomes considered here. Through such searches, and by applying these inclusion criteria, we located meta-analytic correlations between big five traits and eight of these outcome variables (i.e., anxiety, depression, and substance use: Kotov, Gamez, Schmidt, & Watson, 2010; grade point average: Poropat, 2009; happiness and life satisfaction: Steel, Schmidt, & Shultz, 2008; physical exercise: Rhodes & Smith, 2006; risk behavior: Hoyle, Fejfar, & Miller, 2000). Third, with these relationships obtained from the literature, a separate correlation matrix was constructed for each outcome variable defining the meta-analytic intercorrelations between FTP, big five traits, and the outcome variable. Consistent with past research (e.g., Barrick, Mount, & Gupta, 2003; Alarcon, Eschleman, & Bowling, 2009), the meta-analytic intercorrelations among big five traits were taken from Ones (1993). Fourth, the resulting meta-analytic correlation matrix was subjected to path-analysis using conventional ordinary least squares regression procedures. As recommended by Viswesvaran and Ones (1995), the sample size for each path model estimated was the harmonic mean of the sample size across the relevant correlations considered within each meta-analytic correlation matrix.

## **Results**

Study-level descriptives for all studies included in our meta-analysis are reported in Table 2. As shown in Table 2, the ZTPI, CFC, FTPI, and H&M measures are mainly used within the USA, whereas the C&L and LTPDS measures are mainly used within Europe. Furthermore, studies measuring FTP with the ZTPI, CFC, FTPI, LTPDS, and FTO measures tend to focus on student samples (i.e., adolescents and children), whereas studies that assess FTP using the C&L

and H&M measures generally focus on adult samples. This result is also reflected in the mean ages of these studies. Tables 3 and 4 report the meta-analytic results for the relationships of outcomes and antecedents with FTP, respectively. Because of the relatively large number of effects considered in our meta-analysis, we focus our summary of these results on overall FTP relationships. We refer to the tables for the moderation analyses and only summarize these results after describing overall FTP relationships.

– Insert Tables 2, 3, and 4 about here –

### **Outcomes of Future Time Perspective**

**Achievement-related outcomes.** As expected and consistent with Hypothesis 1, Table 3 reveals that FTP was positively associated with GPA ( $\rho = .26$ , 95% CI .22 to .31). Individuals with higher FTP scores were more likely to obtain higher grades. However, we note that the correlation between FTP and GPA is obtained exclusively from adolescent and children samples.

**Well-being.** As expected, FTP was positively associated with life satisfaction ( $\rho = .30$ , 95% CI .22 to .37) and subjective health ( $\rho = .22$ , 95% CI .13 to .30), but was not related to happiness ( $\rho = .09$ , 95% CI -.01 to .19). Hypothesis 2a is thus only partially supported. We note that the number of studies including happiness was low ( $k \leq 10$ ) and mainly used adolescent samples and the ZTPI. Moreover, studies investigating correlations between FTP and subjective health were typically conducted using older adult samples. Supporting Hypothesis 2b, FTP was negatively related to anxiety ( $\rho = -.23$ , 95% CI -.36 to -.09) and depression ( $\rho = -.34$ , 95% CI -.41 to -.26). In summary, compared to individuals lower on FTP, individuals higher on FTP reported higher levels of well-being as indicated by higher levels of life satisfaction and subjective health, and lower levels of anxiety and depression.

**Health behavior.** In line with Hypothesis 3, FTP was positively associated with health-related behaviors as indicated by a negative association with substance use ( $\rho = -.22$ , 95% CI  $-.28$  to  $-.17$ ) and a positive association with physical exercise ( $\rho = .17$ , 95% CI  $.12$  to  $.22$ ). We note that correlations between FTP and substance use were mainly examined with adolescent samples.

**Risk taking-related behavior.** FTP was negatively associated with risk behavior ( $\rho = -.22$ , 95% CI  $-.29$  to  $-.15$ ). Consistent with Hypothesis 4, individuals who report higher FTP are less likely to engage in risk behavior, such as risky driving. However, the number of studies including risk taking-related behavior was low and only used adolescent samples.

**Retirement planning-related outcomes.** FTP was positively associated with financial knowledge ( $\rho = .55$ , 95% CI  $.49$  to  $.60$ ). Individuals with higher FTP reported more financial knowledge related to retirement, which is consistent with Hypothesis 5. However, only seven studies, using adult samples and the H&M measure, included any measure of retirement planning-related outcomes.

### **Antecedents of Future Time Perspective**

**Socio-demographic factors.** *Age.* Table 4 reveals a negative mean correlation between FTP and age ( $\rho = -.12$ , 95% CI  $-.19$  to  $-.05$ ). To test the inverted U-shaped relationship between FTP and age, we followed Sturman (2003) and used a weighted least squared (WLS) regression analysis. In this analysis, mean sample age is the independent variable and the correlation coefficient between age and FTP is the dependent variable. According to the WLS model ( $k = 80$ ), the intercept term was  $.09$  (i.e., the expected correlation between age and FTP at a hypothetical level of age = 0), and the B was  $-.01$  ( $p < .001$ ). This suggests that the correlation between age and FTP decreased as the mean level of age in the sample increased. These results

indicate that the association between age and FTP began positive but then became negative, supporting Hypothesis 6.

**Gender.** Although we did not expect an association between FTP and gender, Table 4 demonstrates a small negative mean correlation between FTP and gender ( $\rho = -.05$ , 95% CI  $-.08$  to  $-.02$ ), indicating that women score higher on FTP than men.

**Socioeconomic status.** In line with Hypothesis 7, we found a positive association between socioeconomic status and FTP ( $\rho = .16$ , 95% CI  $.11$  to  $.21$ ).

**Affective and personality traits.** In line with our expectations, FTP was positively associated with agreeableness ( $\rho = .22$ , 95% CI  $.17$  to  $.28$ ), openness ( $\rho = .12$ , 95% CI  $.06$  to  $.18$ ), extraversion ( $\rho = .09$ , 95% CI  $.04$  to  $.14$ ), conscientiousness ( $\rho = .54$ , 95% CI  $.44$  to  $.65$ ), positive affectivity ( $\rho = .32$ , 95% CI  $.26$  to  $.37$ ), hope ( $\rho = .63$ , 95% CI  $.53$  to  $.73$ ), and optimism ( $\rho = .34$ , 95% CI  $.19$  to  $.50$ ), supporting Hypothesis 8a. However, the number of studies including hope and optimism was somewhat low (i.e.,  $k < 10$ ), and mainly used adolescent samples. As expected, FTP was negatively associated with negative affectivity ( $\rho = -.12$ , 95% CI  $-.19$  to  $-.06$ ), but contrary to our expectations, FTP was not related to neuroticism (low emotional stability;  $\rho = -.05$ , 95% CI  $-.13$  to  $.03$ ), only partly supporting Hypothesis 8b. In summary, affective and personality traits are associated with FTP; more agreeable, open, extraverted, and conscientious individuals who are positive and hopeful, and have low negativity, score higher on FTP.

**Agentive traits.** Supporting Hypothesis 9, we found a positive association between FTP and locus of control ( $\rho = .48$ , 95% CI  $.40$  to  $.56$ ), self-efficacy ( $\rho = .44$ , 95% CI  $.34$  to  $.53$ ), and self-esteem ( $\rho = .31$ , 95% CI  $.21$  to  $.40$ ), although the number of studies including locus of control was somewhat low (i.e.,  $k < 10$ ), and mainly used adolescent samples.

**Moderation analyses.** The  $Q_w$ -statistics (see Tables 3 and 4, right column) for all variables except for financial knowledge were significant, indicating that the observed variance in effect sizes is greater than that which can be attributed to sampling error alone. Accordingly, we next examined the moderating effect of FTP measure, dimension, and type of sample in terms of lifespan stage in all cases where there was sufficient heterogeneity across studies (i.e., a significant  $Q_w$ ) and sufficient data in the subgroups (i.e.,  $k \geq 3$ ). Table 5 provides an overview of these moderation analyses. In addition, Tables 3 and 4 report the significant moderation results. Table 5 shows that 5 of the 18 relationships for which we could test the moderating effect of FTP measure (i.e., depression, age, gender, conscientiousness, and negative affectivity) were moderated by FTP measure and that 6 of the 19 relationships for which we could test the moderating effect of FTP dimension (i.e., life satisfaction, depression, age, openness, conscientiousness, and negative affectivity) were moderated by FTP dimension. In line with our expectations, all three dimensions (i.e., future orientation, continuity, and affectivity) were important for achievement-related outcomes, and affectivity was particularly important for life satisfaction and depression. Additionally, in line with our expectations, conscientiousness was particularly associated with the future orientation dimension of FTP and negative affectivity was particularly associated with the affectivity dimension of FTP. Unexpectedly, however, the big five personality trait openness was more important for the continuity than for the other two dimensions. Finally, 7 of the 15 relationships for which we could test the moderating effect of lifespan stage (i.e., life satisfaction, depression, substance use, age, gender, conscientiousness, and neuroticism) were moderated by the lifespan stage of the sample.

– Insert Table 5 and Figures 1 and 2 about here –

### **Incremental and Mediating Effects of Future Time Perspective**

Estimating zero-order meta-analytic relationships between FTP and outcome variables is important for understanding the direction and strength of these bivariate associations. However, to more closely address the unique relative contribution and mediating role of FTP for the prediction of such outcomes, we also ran a series of meta-analytic path models to support tests of Hypotheses 10 and 11.

***Incremental Effects of Future Time Perspective.*** To test the incremental effect of FTP above-and-beyond big five personality traits for each outcome variable (Hypothesis 10), we noted statistically-significant changes in  $R^2$  between two hierarchical models (i.e., model one: outcome regressed onto each of the big five traits; model two: outcome regressed onto each of the big five traits *and* FTP; complete results of these analyses can be found in Table 6.). For each outcome, an appreciable (i.e., statistically significant) change in the  $R^2$  between these two models was suggestive of incremental predictive ability of FTP over-and-above the big five personality traits. We observed statistically significant incremental effects of FTP for all eight outcome variables considered here. Supporting Hypothesis 10, the addition of FTP to these models explained between an additional 0.051% (i.e., substance abuse) to an additional 5.883% (i.e., life satisfaction) percent of the variance in these outcome variables.

To supplement these tests of incremental  $R^2$ , we sought to ascertain the relative contribution of FTP to the prediction of each outcome variable when construed in tandem with big five personality traits. As such, we additionally conducted relative weights analyses (Johnson, 2000) for each previously-described “model two” (i.e., big five traits *and* FTP; complete results of these analyses can be found in Table 7). Relative weights analyses are a valuable supplement to more traditional tests of incremental predictive effects, because the relative contribution of predictors to model  $R^2$  cannot be accurately determined by examining



regression weights alone (LeBreton, Hargis, Griepentrog, Oswald, & Ployhart, 2007; LeBreton, Ployhart, & Ladd, 2004). Considering the total amount of variance explained ( $R^2$ ) across each of these models, the relative weights analyses suggest that between .94% (happiness;  $R^2 = .422$ ) and 50.79% (GPA;  $R^2 = .086$ ) of the explained variance in these outcome variables could be uniquely attributed to FTP. These findings further corroborate support for Hypothesis 10.

– Insert Tables 6 and 7 about here –

***Indirect Effects of Future Time Perspective.*** Hypothesis 11 implies that FTP mediates the relationship between big five personality traits and outcome variables. To be consistent with best practices for estimating mediation effects (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), indirect effects were calculated as the product of the regression weight defining FTP regressed onto any given big five personality trait (i.e., ‘*a*’ paths; see Table 4), and the regression weight defining any given outcome variable regressed onto FTP, controlling for all big five traits (i.e., ‘*b*’ paths; see Table 3). Such indirect effects serve as evidence for the process by which big five personality traits are indirectly associated with these outcomes through FTP. In addition to indirect effects, we also computed associated confidence intervals to determine whether or not each of these effects was significantly different from zero. Bootstrapping is often advocated for estimating such confidence intervals due to non-normal sampling distributions associated with the product term ‘*ab*’. However, bootstrapping procedures cannot be used on meta-analytic summary data, because raw data are necessary to facilitate iterative replications. We instead adopted the Monte Carlo method for computing confidence intervals for indirect effects (MacKinnon, Lockwood, & Williams, 2004). Simulation studies have suggested that this method performs similarly to bootstrapping procedures (Preacher & Selig, 2012). In support of Hypothesis 11, the results of this analysis suggest that FTP mediates the relationship between big

five personality traits and each outcome variable. Complete results of these analyses can be found in Table 7.

### **Discussion**

Our findings provide empirical support for the widespread role that an individual's FTP plays in well-being, motivation, and behavior. Although data were not available to examine all FTP – outcome relationships across all age groups, meta-analyses of the data available show that FTP was positively related to achievement, well-being, health improving behaviors, and financial knowledge for retirement, and negatively related to risk-taking behavior. Unexpectedly, we found that FTP was not significantly related to happiness. A possible explanation for this finding, is that although individuals higher on FTP have a positive outlook on their future, they are also preoccupied with future goals and less capable of focusing on and enjoying the present moment (Drake et al., 2008). Our findings also address basic questions about the relationships of putative antecedents with FTP. As expected, and in line with self-regulatory focus theory (Higgins, 1997) and social cognitive theory (Bandura, 2006), sociodemographic factors, affective and personality traits, and agentic traits are associated with FTP. In particular, conscientiousness and hope showed strong associations with FTP ( $p > .50$ ). More importantly, however, our results demonstrate that FTP is associated with outcomes (i.e., achievement, well-being, and healthy and risk behaviors) over and above personality traits. For example, considering our relative weights analysis, the big five and FTP accounted for  $R^2 = 8.60\%$  of the variance in GPA; 51% of this explained variance is attributed to FTP, compared to 35% for conscientiousness. Moreover, the big five and FTP accounted for  $R^2 = 8.90\%$  of the variance in risk behavior; 45% of this explained variance is due to FTP, whereas 37% of this variance is accounted for by agreeableness. It is also worth pointing out that although the combination of big five and FTP

accounted for a notable amount of variation in a number of the outcomes considered here (e.g.,  $R^2 = 37.80\%$  for depression), for certain outcomes, a smaller yet still appreciable (i.e., statistically significant) proportion of the variance was explained by these predictors (e.g.,  $R^2 = 8.60\%$  for GPA). Moreover, we found that FTP mediates the associations between personality traits and outcomes related to achievement, well-being, health behavior, and risk behavior. Finally, our findings demonstrate that FTP measures, FTP dimensions, and lifespan stage of the sample moderate many of the antecedent – FTP and FTP – outcome relationships, indicating that FTP measures and dimensions, and the lifespan stage of the sample matter for explaining these effects.

### **Theoretical Contributions**

Our paper makes three important contributions to the growing literature on FTP in different subdisciplines of psychology, and particularly organizational psychology. First, to our knowledge this is the first empirical study to examine FTP relationships across research domains and to examine the moderating effects of different measures and dimensions of FTP and sample characteristics. As noted previously, our integrative review and meta-analysis provides empirical support for the view that an individual's perception of the future is consistently related to well-being, motivation, and behaviors across a range of domains. In addition, we demonstrate that particular affective and personality traits are associated with FTP. However, the importance of traits varied considerably. Hope and conscientiousness had the highest correlations with FTP, suggesting that particularly a positive outlook on the future and the discipline to plan for that future are associated with a higher FTP, again emphasizing the importance of both the affective and cognitive aspects of FTP. Relationships between FTP and its antecedents and outcomes also differ across FTP measures and dimensions. These results suggest that FTP consists of multiple

dimensions that might differentially relate to these antecedents and outcomes. More specifically, and in line with our expectations, all three dimensions (i.e., future orientation, continuity, and affectivity) were important for achievement-related outcomes, and affectivity was particularly important for well-being. Furthermore, in line with our expectation that the future orientation and affectivity dimension of FTP are associated with affective and personality traits, conscientiousness was associated with the future orientation dimension and negative affectivity was associated with the affectivity dimension. These results support the idea that FTP is a higher-order construct consisting of different dimensions, which are differently related to outcomes and antecedents, and are thus likely to be explained by different mechanisms. Thus, although FTP dimensions are reflective of the same phenomenon (i.e., a general concern for and consideration of the future), the underlying processes explaining its antecedents and outcomes seem to differ. For example, the positive association between conscientiousness and FTP may hint at different mechanisms. Conscientious individuals are dutiful and organized, and are thus more likely to anticipate immediate and long-term consequences of their behavior (i.e., higher continuity). Conscientious individuals also plan ahead, and are thus more oriented towards the future (i.e., higher future orientation). In this example, such dimensions operate in the same positive direction, but this does not necessarily have to be the case. For example, although anxiety is a future-oriented emotion (i.e., higher future orientation), it is negatively associated with FTP because individuals higher on FTP have a more optimistic view of their future and more confidence in achieving future goals than individuals with a lower FTP (i.e., higher affectivity). We argue that this idea underlies the richness of the FTP construct; it captures different dimensions that are important for motivated action as identified by, for example, Vroom's (1964) expectancy theory and Bandura's (2006) social cognitive theory. The

moderating effects of FTP measures also suggest that FTP researchers should use different measures in different circumstances. For example, when examining the role of FTP among older workers, the CFC scale might be most appropriate because it is unrelated to age.

Second, we advanced the theoretical development of FTP by proposing an integrative, motivationally-based framework and describing underlying processes that explain the relationships between general individual differences, FTP, and outcomes. Our results provide process explanations of the relationships between traits, motivation, and behavior by demonstrating that FTP mediates the relationships between traits and important outcomes. Personality traits describe what people do and prefer (Costa & McCrae, 1992), but do not address the connection between current dispositional tendencies and individual motivation and behavior. FTP thus explains why conscientious individuals perform better, or why agreeable individuals have higher well-being. For example, conscientious individuals might perform better at work because they focus on or envision the future, and thus develop future goals and engage in particular behaviors to achieve those goals. This, in turn, makes them more successful. These findings and associated process explanations advance theories in organizational psychology by explaining the underlying processes that support job performance and other relevant work outcomes.

Third, we demonstrated the importance of FTP for these outcomes by showing the incremental validity of FTP in addition to the big five personality traits. Our findings underscore the critical importance of individual differences in temporal perspective in the prediction of well-being and behavior. Most research on GPA to date, for example, has focused on conscientiousness ( $k = 135$  studies; Poropat, 2009), ignoring FTP. Similarly, in organizational psychology, FTP is largely missing from achievement studies focusing on job performance. Our

results demonstrate that it is extremely important to incorporate FTP in future organizational psychology research, because FTP functions very differently than personality traits in this regard (Sonnentag, 2012). Indeed, FTP is a self-contextualizing, flexible, and cognitive-motivational construct.

### **Practical Implications**

This integrative review and meta-analysis on FTP is not only important for scientific purposes, but also has at least three practical implications for the prediction and potential modification of behaviors fundamental to the well-being of organizations and societies. On the one hand, our findings of the moderating effects of FTP measure suggest that we need to know more about assessing FTP, and that practitioners should exercise caution in their choice of an FTP measure intended to provide predictive information about employee behavior and achievement. On the other hand, our results also show that FTP provides incremental predictive validity for key outcomes, above and beyond personality trait measures, and may be particularly effective in predicting behaviors in which motivational orientation and self-regulation play a significant role. Third, and perhaps most importantly, our findings are consistent with earlier research (Lang & Carstensen, 2002), which suggests that FTP may be modified to promote physical exercise, facilitate new skill learning, safe work behaviors, and long-term career planning. For example, the relationship between FTP and achievement, although based largely on adolescent samples, has potential implications for the development of more effective adult skill training programs through an emphasis on future goals and the relationship between current learning efforts and future goal attainment. For organizations and society, interventions to promote physical exercise and healthy work habits may benefit from targeting an individual's FTP by directing greater attention towards their future.

## Limitations

An important limitation of this review is that many of the studies on FTP do not report correlations, particularly older studies (e.g., Thayer, Gorman, Wessman, Schmeidler, & Mannucci, 1975). We emailed the authors of studies published after 2000, and asked them to email their correlation matrices to us. Sixty-eight percent of the emailed authors provided us with the requested correlations (e.g., Ferarri et al., 2012; Zhao et al., 2012). Nevertheless, many of the effect sizes between FTP and its correlates were based on a low number of studies (e.g., optimism, happiness), particularly in the moderator analyses. Additionally, we could not perform meta-analyses on all correlates of interest (e.g., achievement motivation, job performance, proactive work behaviors). This also meant we were unable to test different mechanisms in the associations between personality traits, FTP, and outcomes. Our argument that FTP is a higher-order construct consisting of different dimensions suggests, for example, that conscientiousness influences academic achievement through its effect on both the future orientation and continuity dimensions of FTP, but we could not test this. Additionally, we only found one relevant unpublished study for inclusion here. Nevertheless, the fail-safe  $N$ , or number of studies confirming the null hypothesis that would be needed to reverse a conclusion that a significant relationship exists (Rosenthal, 1979), is above 39 for the overall relationships. Furthermore, most studies (87%) were cross-sectional studies, making it difficult to assess causality. Finally, different research domains tend to use different measures of FTP, precluding some of the moderator analyses with FTP measure or dimension (e.g., the H&M measure is typically used in studies focusing on retirement planning, the C&L measure in studies including subjective health, and the ZTPI in studies of happiness). Future research should fill these research gaps before we can draw definite conclusions on suitable FTP measures for specific outcomes.

### **Future Research Agenda**

Our quantitative aggregation and summary of the FTP literature raises several potentially fruitful directions for future research. One area pertains to the dimensionality of the FTP construct and the way that these dimensions are assessed. Our findings support the call by other researchers (e.g., De Bilde et al., 2011; Husman & Shell, 2008) for the development of a uniform measure of FTP that provides for valid assessment of the three most relevant dimensions, namely future orientation, continuity, and affectivity (see Brothers, Chui, & Diehl, 2014 for a first attempt). Of course, such a measure should build upon existing measures. For example, some of the items of Zimbardo's FTP refer to planning, and to participants' anticipation of future goals (i.e., continuity; De Bilde et al., 2011), while other items refer to future orientation more broadly. Similarly, although Carstensen and Lang (1996) measure FTP as a bipolar variable, ranging from a limited to an expansive future (e.g., Lang & Carstensen, 2002), Kooij et al. (2014) distinguished the dimensions "remaining opportunities" and "remaining time" (see also Zacher & Frese, 2009) using the same C&L scale. It is extremely important to develop a measure that captures all three dimensions, because otherwise wrong conclusions can be drawn. For example, although we found an expected curvilinear, inverted U-shaped relationship between age and FTP, our findings show that the nature of this relationship depends upon the type of FTP measure used. For example, age was negatively related to FTP when measured with the C&L scale, but positively related to FTP when measured with the ZTPI. It is important to note that, although studies measuring FTP with the ZTPI included both adolescent and adult samples, the mean age of these samples was lower than the mean age of samples in studies that measured FTP with the C&L scale ( $t = 4.07, p < .001$ ). We also found differences in the way that age is related to FTP dimensions. For example, age was negatively related to the affectivity dimension, but



positively related to future orientation, suggesting that although older people are less positive about their future opportunities, they are also more attuned to their future compared to younger people. Taken together, our results suggest that greater attention should be given to the dimension of FTP considered and measured. In addition, these findings indicate that some FTP dimensions (i.e., future orientation and affectivity) demonstrate change across the lifespan. Longitudinal research is therefore needed to examine the stability and dynamics of FTP dimensions and potential age-related changes in other dimensions of FTP (i.e., continuity). Moreover, future research should strive to understand the experience of time as a function of chronological age, as well as related variables, such as developmental tasks and strong negative life events (e.g., illness, the death of a relative, or unemployment; see Erikson & Erikson, 1998; Levinson, 1986).

Second, although our study did not permit analysis of intra-individual variability in FTP across outcome domains, there is some evidence for such variability (e.g., individuals may have higher FTP with respect to work and financial outcomes, but possess lower FTP with respect to health outcomes; Baker, Johnson & Bickel, 2003; Adams, 2009). Future studies of domain-specific relationships between FTP and outcomes might examine the motivational content of future goals or the appropriateness of different measures of FTP in specific domains (e.g., Fong & Hall, 2003; Peetsma, 1985; see Seginer, 2009 for a review). In light of an aging workforce, for example, the determinants and outcomes of FTP related to one's work (Rudolph, Kooij, Rauvola, & Zacher, in press; Zacher & Frese, 2009) might have important practical implications for sustaining employability and improving work satisfaction. Future studies should also examine associations between general and occupational FTPs and the comparative validity of these dimensions for predicting employee motivation and performance.

A final area for future research stems from our findings on the relationship between FTP and achievement outcomes, which only included GPA. Additional research is needed to understand the influence of FTP on other achievement-related outcomes that occur in different contexts, including task effort and persistence, job performance, longevity in maintaining health gains associated with interventions to reduce weight, smoking, and substance use, and career success (see Zacher et al., 2010 for an example). Such findings have particular relevance for employers and public policy makers concerned with the extension of healthy and longer working lives in aging populations.

### **Summary**

Despite the disparate nature of theory and research on FTP and the many measures that have been used to assess individual differences in the experience of future time, our findings provide broad and consistent evidence that one's perception of the future is related to an array of societally, organizationally, and personally important behaviors and outcomes - predicting these outcomes over and above big five personality traits. Our findings also indicate that FTP is associated with personality traits, as well as socio-demographic variables. Future research is needed to develop a valid, uniform measure of FTP, to investigate the events and processes through which FTP changes, and to ascertain the efficacy of interventions that aim to extend the future experience of time in vulnerable populations.

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Note: \* denotes studies used in the meta-analysis

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Table 1. Descriptive statistics for broad measures of future time perspective.

Measure	# of Studies	Conceptualization	(Sub) Dimensions	State or Trait	Mean $\alpha$	Example Items
Zimbardo Time Perspective Inventory (Zimbardo, 1990; Zimbardo Keough, & Boyd, 1997)	94	General <i>future orientation</i>	Future orientation	Trait	.73	“I believe that a person’s day should be planned ahead each morning.” “I am able to resist temptations when I know there is work to be done.”
Consideration of Future Consequences Scale (Strathman, Gleicher, Boninger, & Edwards, 1994)	55	The extent to which individuals consider the potential <i>distant outcomes</i> of their current behaviors and the extent to which they are influenced by these potential outcomes	Continuity	Trait	.79	“I consider how things might be in the future, and try to influence those things with my day to day behavior.” “I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.”
Future Time Perspective Scale (Carstensen & Lang, 1996)	39	Individuals’ perceptions of their <i>remaining time</i> to live and the opportunities within that time	Affectivity and extension	State	.84	“Most of my time lies ahead of me.” “Many opportunities await me in the future.”
The Achievability of Future Goals Scale (Heimberg, 1963)	8	The <i>affective evaluation</i> of the future (optimism) – 8 items	Affective component	Trait	.80	“In the future I expect to succeed in what concerns me most.” “I expect to become the kind of person I most want to be”.
Future Time Perspective (Hershey & Mowen, 2000)	8	Extent to which individuals <i>plan for</i> and enjoy thinking about the future	Future orientation	Trait	.71	“I enjoy thinking about how I will live 10+ years in the future.”



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Long-Term Personal Direction Scale (subscale of Temporal Experience Questionnaire; Wessman, 1973)	6	Refers to continuity, or the tendency to <i>structure</i> or map the future with events	Continuity	Trait	.81	“I have established long- term goals and am working to fulfill them.” “I feel that life has no pattern or reason” “I proceed in an orderly way toward goals set along in advance”
Future Time Orientation Scale (Gjesme, 1975; 1979)	2	General <i>capacity to anticipate</i> , shed light on and structure the future	Future orientation	Trait	.68	“I think about the future only to a very small extent.” “Usually I feel time is going too fast.”

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Table 2. Sample characteristics associated with each future time perspective measure.

<b>FTP Measure</b>	<b><i>k</i></b>	<b>Total <i>N</i></b>	<b>Study Design</b>	<b>Country/ Continent</b>	<b>Sample Type</b>	<b>Age Range</b>	<b>Mean Age (<i>k</i>)</b>	<b>% Male (<i>k</i>)</b>
ZTPI	94	60,729	(81%) [19%]	U.S. 57% Europe 28% Asia 6% Other 9%	Employees 1% Students 69% General population 20% Other 10%	Adolescents (> 13) 73% Adults 25% Older adults 2%	27.81 (71)	43.30% (90)
CFC	55	23,821	(91%) [9%]	U.S. 47% Europe 36% Asia 2% Other 15%	Employees 14.5% Students 54.5% General population 31%	Adolescents (> 13) 57% Adults 39% Older adults 4%	30.69 (37)	43.87% (46)
C&L	39	15,216	(90%) [10%]	U.S. 31% Europe 49% Asia 13% Other 8%	Employees 23% Students 8% General population 69%	Adolescents (> 13) 8% Adults 72% Young & older adults 5% Older adults 15%	46.27 (38)	41.16% (36)
AFGS	8	2,313	(100%)	U.S. 62.5% Europe 37.5%	Students 87.5% General population 12.5%	Children 25% Adolescents (> 13) 75%	17.35 (6)	49.63% (8)
H&M FTP	8	4,835	(100%)	U.S. 75% Other 25%	Employees 37.5% Students 12.5% General population 50%	Adolescents (> 13) 12.5% Adults 87.5%	42.34 (8)	48.46% (6)
LTPDS	6	2,488	(100%)	U.S. 17% Europe 83%	Students 100%	Children 17% Adolescents (> 13) 83%	16.00 (6)	46.64% (6)
FTO	2	784	(100%)	U.S. 50% Europe 50%	Students 100%	Children 50% Adolescents (> 13) 50%	19.08 (1)	43.55% (2)

Total	212	110,186	(87%) [13%]	U.S. 49.5%	Employees 10%	Children 1.9%	32.49	43.6%
				Europe 34.9%	Students 54%	Adolescents (> 13)	(167)	(194)
				Asia 5.7%	General population 32%	54.5%		
				Other 9.9%	Other 4%	Adults 37.8%		
						Older adults 4.8%		
						Young & older adults 1%		

*Note.* ZTPI = Zimbardo Time Perspective Inventory; CFC = Consideration of Future Consequences Scale; C&L = Carstensen & Lang Future Time Perspective Scale; AFGS = The Achievability of Future Goals Scale; H&M = Hershey & Mowen Future Time Perspective; LTPDS = Long-Term Personal Direction Scale; FTO = Future Time Orientation scale; Cross-sectional = ( ); Longitudinal = [ ].

Table 3. Correlations of future time perspective with outcome and moderator variables.

Variable	<i>N</i>	<i>k</i>	<i>r</i>	$\rho$	<i>SDp</i>	95% LCI	95% UCI	FS 5%	<i>Qw/Qb</i>
<b>GPA</b>	7536	19	.22	.26***	.10	.22	.31	820.83	48.70***
<b>Happiness (.87)</b>	2084	5	.07	.09	.10	-.01	.19	.73	12.83*
<b>Life Satisfaction (.87)</b>	10141	19	.24	.30***	.15	.22	.37	370.57	167.93***
<i>FTP Dimension</i>									17.55***
Future orientation	6241	14	.19	.23***	.08	.19	.28	460.13	
Affectivity	3635	3	.39	.45***	.08	.36	.54	36.39	
<i>Lifespan Stage</i>									5.19*
Adolescents	5691	13	.19	.24***	.11	.17	.31	242.70	
Adults	4133	4	.33	.39***	.10	.28	.50	39.22	
<b>Subjective Health</b>	8392	15	.19	.22***	.15	.13	.30	120.46	146.48***
<b>Anxiety (.87)</b>	1950	13	-.18	-.23**	.22	-.36	-.09	39.80	55.64***
<b>Depression (.83)</b>	4327	16	-.27	-.34***	.10	-.41	-.26	412.67	33.65**
<i>FTP Measure</i>									10.54**
C&L	2935	6	-.32	-.44***	.07	-.48	-.40	67.33	
ZTPI	1163	8	-.22	-.29***	.13	-.37	-.22	91.60	
<i>FTP Dimension</i>									10.54**
Future orientation	1163	8	-.22	-.29***	.13	-.37	-.22	91.60	
Affectivity	2935	6	-.32	-.44***	.07	-.48	-.40	67.33	
<i>Lifespan Stage</i>									13.87**
Adolescents	760	5	-.22	-.27***	.09	-.37	-.18	60.50	
Adults	3231	7	-.36	-.44***	.06	-.47	-.40	249.73	
Older adults	336	4	-.15	-.25**	.21	-.41	-.09	.14	
<b>Substance Use (.76)</b>	33753	30	-.17	-.22***	.13	-.28	-.17	787.33	289.77***
<i>Lifespan Stage</i>									15.17***
Adolescents	31103	27	-.19	-.25***	.12	-.30	-.21	962.61	
Adults	2650	3	.02	.01	.10	-.11	.14	-2.93	
<b>Physical Exercise</b>	6333	15	.14	.17***	.08	.12	.22	245.69	29.14*
<b>Risk Behavior (.66)</b>	4257	7	-.15	-.22***	.08	-.29	-.15	87.54	13.10*
<b>Financial Knowledge (.87)</b>	3337	7	.41	.55***	.06	.49	.60	1100.14	6.78

*Note.* The average alpha coefficient across all studies that reported the alpha for the focal variable is given in brackets,  $N$  = the number of individuals in the  $k$  samples,  $k$  = the number of studies/samples,  $r$  = uncorrected sample size weighted effect size,  $\rho$  = mean true score correlation,  $SD\rho$  = standard deviation of  $\rho$ , 95% LCI = lower bound of confidence interval, 95% UCI = upper bound of confidence interval (the confidence interval of a significant mean correlation does not include zero), FS 5% = the number of studies confirming the null hypothesis that would be needed to reverse a conclusion that a significant relationship exists,  $Q_w$  = homogeneity statistic (a significant  $Q_w$  means there are moderators),  $Q_b$  = homogeneity statistic (a significant  $Q_b$  means a significant moderation).

Table 4. Correlations of future time perspective with antecedent and moderator variables.

Variable	<i>N</i>	<i>k</i>	<i>r</i>	$\rho$	<i>SDp</i>	95% LCI	95% UCI	FS 5%	<i>Qw/Qb</i>
<b>Age</b>	40163	95	-.11	-.12***	.33	-.19	-.05	321.42	3382.38***
<i>FTP Measure</i>									167.36***
C&L	14585	34	-.43	-.47***	.22	-.53	-.40	1758.45	
ZTPI	10308	28	.09	.09*	.13	.02	.17	118.74	
CFC	10610	26	.03	.04	.13	-.03	.12	-9.26	
H&M	4385	5	.10	.11	.09	-.06	.27	6.67	
<i>FTP Dimension</i>									133.98***
Future orientation	14693	33	.09	.09*	.12	.02	.16	222.88	
Affectivity	14860	36	-.40	-.44***	.23	-.51	-.37	1546.20	
Continuity	10610	26	.03	.04	.13	-.04	.12	-9.26	
<i>Lifespan Stage</i>									25.00***
Adolescents	9563	26	.08	.10	.12	-.01	.21	107.00	
Adults	26499	55	-.22	-.24***	.34	-.31	-.16	451.19	
Older adults	2312	8	-.07	-.07	.17	-.27	.13	-4.14	
<b>Gender</b>	26119	55	-.05	-.05**	.11	-.08	-.02	156.52	231.47***
<i>FTP Measure</i>									9.46*
C&L	7818	18	-.05	-.05*	.06	-.10	-.00	68.21	
ZTPI	5383	13	-.11	-.11***	.17	-.17	-.05	13.15	
CFC	8026	18	-.02	-.03	.08	-.08	.03	-9.38	
H&M	4385	5	.03	.04	.06	-.05	.12	-2.30	
<i>Lifespan Stage</i>									12.93**
Adolescents	7768	19	-.10	-.12***	.12	-.17	-.07	88.01	
Adults	15906	29	-.01	-.01	.08	-.05	.03	-25.34	
Older adults	1764	5	-.01	-.02	.04	-.11	.08	-4.42	
<b>SES</b>	15612	38	.15	.16***	.14	.11	.21	562.13	248.42***
<b>Agreeableness (.75)</b>	7525	17	.17	.22***	.10	.17	.28	385.02	42.95***
<b>Openness (.76)</b>	8122	20	.09	.12***	.12	.06	.18	106.32	61.63***
<i>FTP Dimension</i>									3.89*
Future orientation	4843	14	.07	.09**	.14	.02	.15	11.64	
Continuity	3192	5	.14	.21***	.05	.11	.31	73.80	

<b>Extraversion</b> (.84)	7569	17	.07	.09***	.09	.04	.14	60.87	42.08**
<b>Conscientiousness</b> (.81)	12641	32	.43	.54***	.28	.44	.65	1236.28	590.05***
<i>FTP Measure</i>									35.39***
ZTPI	4902	14	.60	.77***	.14	.68	.87	1996.60	
CFC	6965	14	.29	.36***	.18	.26	.46	217.56	
<i>FTP Dimension</i>									27.77***
Future orientation	5409	16	.57	.74***	.16	.64	.83	1808.94	
Continuity	6965	14	.29	.36***	.18	.26	.46	217.56	
<i>Lifespan Stage</i>									16.04***
Adolescents	7765	22	.52	.66***	.26	.56	.75	930.78	
Adults	4876	10	.23	.31***	.26	.16	.45	29.91	
<b>Positive Affectivity</b> (.86)	10454	20	.26	.32***	.11	.26	.37	887.74	84.90***
<b>Hope</b> (.78)	5094	9	.48	.63***	.14	.53	.73	517.11	54.39***
<b>Optimism</b> (.72)	1930	7	.26	.34***	.16	.19	.50	41.48	28.90***
<b>Neuroticism</b> (.78)	8131	19	-.04	-.05	.16	-.13	.03	-8.19	128.76***
<i>Lifespan Stage</i>									4.20**
Adolescents	6427	14	-.00	-.00	.15	-.09	.09	-14.00	
Adults	1704	5	-.15	-.19*	.11	-.35	-.04	16.95	
<b>Negative Affectivity</b> (.84)	8664	20	-.10	-.12***	.13	-.19	-.06	76.09	104.76***
<i>FTP Measure</i>									5.37*
C&L	4588	8	-.18	-.21***	.10	-.30	-.12	37.88	
ZTPI	4076	12	-.06	-.08*	.09	-.15	-.01	24.78	
<i>FTP Dimension</i>									5.37*
Future orientation	4076	12	-.06	-.08*	.09	-.15	-.01	24.78	
Affectivity	4588	8	-.18	-.21***	.10	-.30	-.12	37.88	
<b>Locus of Control</b> (.74)	2903	9	.36	.48***	.11	.40	.56	429.83	19.70*
<b>Self-Efficacy</b> (.80)	4682	12	.33	.44***	.15	.34	.53	363.68	57.52***
<b>Self-Esteem</b> (.85)	7011	12	.25	.31***	.15	.21	.40	160.09	98.77***

*Note.* The average alpha coefficient across all studies that reported the alpha for the focal variable is given in brackets,  $N$  = the number of individuals in the  $k$  samples,  $k$  = the number of studies/samples,  $r$  = uncorrected sample size weighted effect size,  $\rho$  = mean true score correlation,  $SD\rho$  = standard deviation of  $\rho$ , 95% LCI = lower bound of confidence interval, 95% UCI = upper bound of confidence interval (the confidence interval of a significant mean correlation does not include zero), FS 5% = the number of studies confirming the null hypothesis that would be needed to reverse a conclusion that a significant relationship exists,  $Q_w$  = homogeneity statistic (a significant  $Q_w$  means there are moderators),  $Q_b$  = homogeneity statistic (a significant  $Q_b$  means a significant moderation).

Table 5. Summary of moderation analyses

<b>Construct</b>	<b>FTP measure</b>	<b>FTP dimension</b>	<b>Lifespan stage of sample</b>
GPA	X	X	X
Happiness	n.a.	n.a.	n.a.
Life Satisfaction	X	M	M
Subjective Health	n.a.	n.a.	n.a.
Anxiety	X	X	X
Depression	M	M	M
Substance Use	X	X	M
Physical Exercise	X	X	X
Risk Behavior	n.a.	n.a.	n.a.
Age	M	M	M
Gender	M	X	M
SES	X	X	X
Agreeableness	X	X	X
Openness	X	M	X
Extraversion	X	X	X
Conscientiousness	M	M	M
Positive Affectivity	X	X	X
Hope	X	X	n.a.
Optimism	n.a.	n.a.	n.a.
Neuroticism	X	X	M
Negative Affectivity	M	M	n.a.
Locus of Control	n.a.	n.a.	n.a.
Self-Efficacy	X	X	n.a.
Self-Esteem	n.a.	X	n.a.

*Note.* X = no moderation; M = significant moderation; n.a. = moderation could not be tested.



Table 6.

Summary of incremental models (above-and-beyond the big five)

	<b>Model 1 <math>R^2</math></b>	<b>Model 2 <math>R^2</math></b>	<b><math>\Delta R^2</math></b>	<b><math>\Delta R^2\%</math></b>	<b><math>F_{\text{partial}}</math></b>	<b>p-value</b>
GPA	0.065	0.086	0.021	2.101%	322.920	< .001
Happiness	0.416	0.422	0.006	0.592%	22.009	< .001
Life Satisfaction	0.210	0.269	0.059	5.883%	172.998	< .001
Anxiety	0.223	0.237	0.013	1.320%	227.831	< .001
Depression	0.334	0.378	0.045	4.472%	1.470.170	< .001
Substance Use	0.281	0.281	0.001	0.051%	18.710	< .001
Physical Exercise	0.105	0.108	0.003	0.261%	31.270	< .001
Risk Behavior	0.054	0.089	0.035	3.539%	240.174	< .001

Note. Model 1 = big five; Model 2 = big five + FTP,  $R^2$  = variance explained in each outcome,  $\Delta R^2$  = noted change in  $R^2$  from Model 1 to Model 2, representing the unique incremental variance explained in each outcome that is attributable to FTP, above-and-beyond the big five.  $\Delta R^2\%$  =  $\Delta R^2$  represented as the percentage of incremental variance explained in each outcome, above-and-beyond the big five.  $F_{\text{partial}}$  = Test of  $\Delta R^2$ .

Table 7. Summary of relative weights and indirect effects models

DV: <b>FTP</b> F = 2,482.730 (p < .001) R2 = .343										
Predictor	<i>B</i>	<i>SE<sub>B</sub></i>	<i>t</i> -value	<i>p</i>	Raw RW	RS RW %				
O	0.158	0.007	21.599	< .001	0.018	5.195				
C	0.570	0.008	75.269	< .001	0.285	83.248				
E	0.080	0.007	10.962	< .001	0.006	1.855				
A	0.074	0.008	9.805	< .001	0.025	7.382				
ES	-0.157	0.008	-20.596	< .001	0.008	2.319				
DV: <b>GPA</b> F = 221.221 (p < .001), R2 = .086										
Indirect Effects Through FTP										
Predictor	<i>B</i>	<i>SE<sub>B</sub></i>	<i>t</i> -value	<i>p</i>	Raw RW	RS RW %	IE	<i>SE<sub>IE</sub></i>	95% CI Lower	95% CI Upper
O	0.099	0.008	11.644	< .001	0.009	10.959	0.028	0.002	0.025	0.033
C	0.139	0.010	13.425	< .001	0.030	34.635	0.102	0.006	0.087	0.110
E	-0.036	0.008	-4.276	< .001	0.001	0.920	0.014	0.001	0.010	0.016
A	-0.003	0.009	-0.376	0.707	0.002	1.888	0.013	0.002	0.010	0.016
ES	-0.033	0.009	-3.744	< .001	0.001	0.804	-0.028	0.002	-0.032	-0.024
FTP	0.179	0.010	17.969	< .001	0.044	50.794				
DV: <b>Happiness</b> F = 260.918 (p < .001), R2 = .422										
Indirect Effects Through FTP										
Predictor	<i>B</i>	<i>SE<sub>B</sub></i>	<i>t</i> -value	<i>p</i>	Raw RW	RS RW %	IE	<i>SE<sub>IE</sub></i>	95% CI Lower	95% CI Upper
O	0.020	0.017	1.179	0.239	0.007	1.580	-0.015	0.004	-0.028	-0.011
C	0.191	0.021	9.092	< .001	0.039	9.170	-0.054	0.013	-0.088	-0.038
E	0.417	0.017	24.353	< .001	0.194	45.999	-0.008	0.002	-0.011	-0.002
A	0.120	0.018	6.816	< .001	0.042	9.948	-0.007	0.003	-0.014	-0.004
ES	0.302	0.018	16.771	< .001	0.136	32.366	0.015	0.004	0.011	0.028
FTP	-0.095	0.020	-4.690	< .001	0.004	0.938				
DV: <b>Life Satisfaction</b> F = 131.86 (p < .001), R2 = .269										
Indirect Effects Through FTP										
Predictor	<i>B</i>	<i>SE<sub>B</sub></i>	<i>t</i> -value	<i>p</i>	Raw RW	RS RW %	IE	<i>SE<sub>IE</sub></i>	95% CI Lower	95% CI Upper
O	-0.097	0.019	-4.992	< .001	0.002	0.914	0.047	0.007	0.040	0.067
C	-0.032	0.024	-1.346	0.178	0.017	6.247	0.171	0.015	0.140	0.198
E	0.207	0.019	10.747	< .001	0.057	21.325	0.024	0.005	0.011	0.032
A	-0.031	0.020	-1.564	0.118	0.005	1.782	0.022	0.005	0.009	0.030
ES	0.357	0.020	17.629	< .001	0.119	44.098	-0.047	0.007	-0.070	-0.041
FTP	0.299	0.023	13.150	< .001	0.069	25.635				
DV: <b>Anxiety</b> F = 680.503 (p < .001), R2 = .237										
Indirect Effects Through FTP										
Predictor	<i>B</i>	<i>SE<sub>B</sub></i>	<i>t</i> -value	<i>p</i>	Raw RW	RS RW %	IE	<i>SE<sub>IE</sub></i>	95% CI Lower	95% CI Upper
O	-0.038	0.008	-4.746	< .001	0.005	1.983	-0.022	0.002	-0.027	-0.020

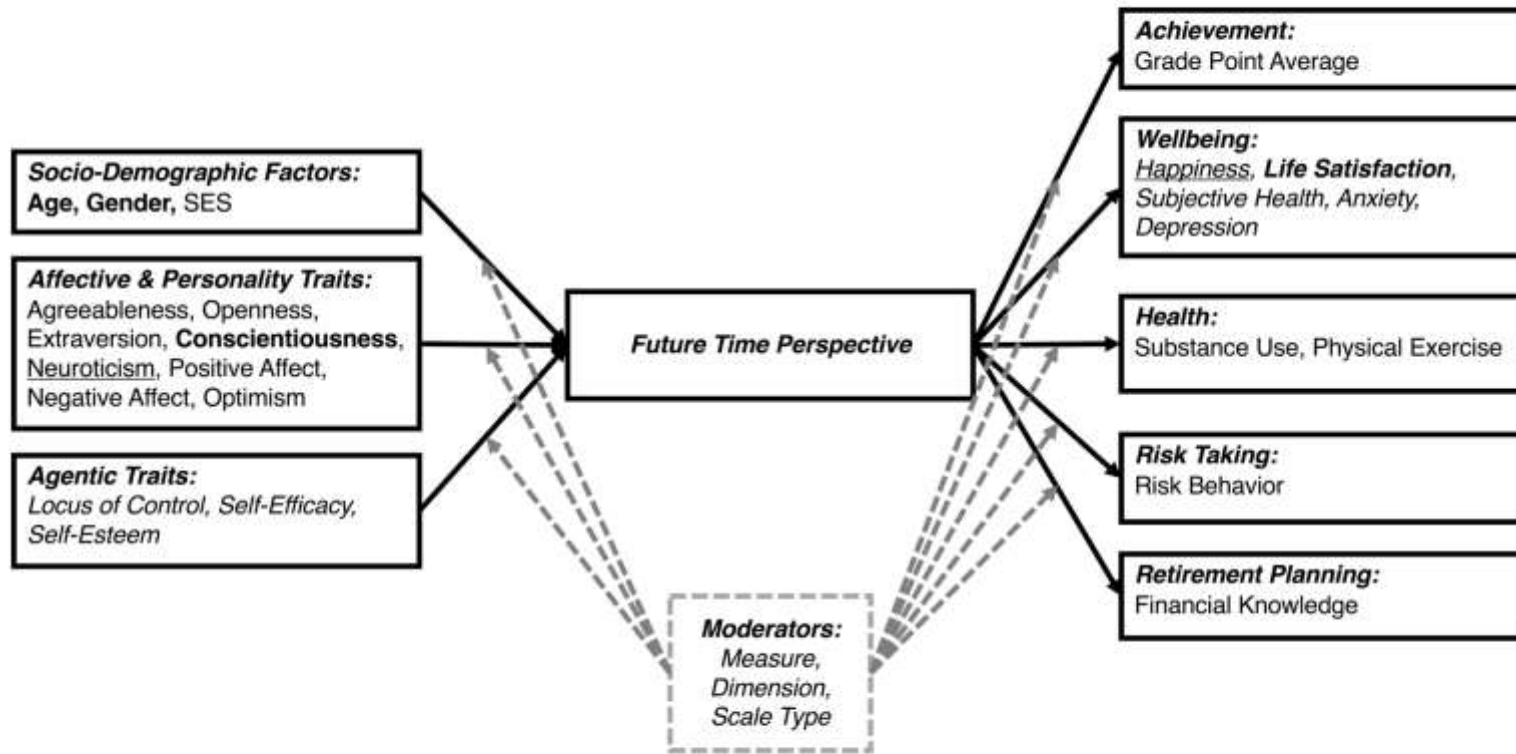
C	-0.201	0.010	-20.564	< .001	0.054	22.803	-0.081	0.005	-0.096	-0.075
E	-0.143	0.008	-18.030	< .001	0.025	10.547	-0.011	0.001	-0.012	-0.007
A	0.241	0.008	29.367	< .001	0.024	10.110	-0.011	0.001	-0.015	-0.009
ES	-0.308	0.008	-36.776	< .001	0.096	40.660	0.022	0.002	0.020	0.027
FTP	-0.142	0.009	-15.093	< .001	0.033	13.896				
DV: <b>Depression</b> F = 2,072.700 (p < .001), R2 = .378							Indirect Effects Through FTP			
Predictor	B	SE <sub>B</sub>	t-value	p	Raw RW	RS RW %	IE	SE <sub>IE</sub>	95% CI Lower	95% CI Upper
O	0.022	0.006	3.817	< .001	0.003	0.694	-0.041	0.002	-0.044	-0.037
C	-0.153	0.007	-21.619	< .001	0.065	17.308	-0.149	0.004	-0.167	-0.151
E	-0.178	0.006	-30.935	< .001	0.044	11.654	-0.021	0.002	-0.028	-0.021
A	0.174	0.006	29.308	< .001	0.008	2.222	-0.019	0.002	-0.024	-0.017
ES	-0.430	0.006	-71.029	< .001	0.182	48.031	0.041	0.002	0.040	0.048
FTP	-0.261	0.007	-38.342	< .001	0.076	20.092				
DV: <b>Substance Use</b> F = 1,725.656 (p < .001), R2 = .281							Indirect Effects Through FTP			
Predictor	B	SE <sub>B</sub>	t-value	p	Raw RW	RS RW %	IE	SE <sub>IE</sub>	95% CI Lower	95% CI Upper
O	-0.033	0.005	-6.125	< .001	0.003	1.001	0.004	0.001	0.003	0.007
C	-0.374	0.007	-56.004	< .001	0.132	46.783	0.016	0.004	0.012	0.026
E	-0.099	0.005	-18.187	< .001	0.015	5.385	0.002	0.001	0.002	0.004
A	-0.101	0.006	-18.007	< .001	0.033	11.625	0.002	0.001	0.002	0.003
ES	-0.215	0.006	-37.556	< .001	0.079	28.159	-0.004	0.001	-0.007	-0.003
FTP	0.028	0.006	4.325	< .001	0.020	7.048				
DV: <b>Physical Exercise</b> F = 215.224 (p < .001), R2 = .108							Indirect Effects Through FTP			
Predictor	B	SE <sub>B</sub>	t-value	p	Raw RW	RS RW %	IE	SE <sub>IE</sub>	95% CI Lower	95% CI Upper
O	0.052	0.010	5.390	< .001	0.004	3.872	0.010	0.002	0.007	0.015
C	0.190	0.012	16.192	< .001	0.030	28.262	0.036	0.007	0.026	0.053
E	0.228	0.010	23.879	< .001	0.049	45.424	0.005	0.001	0.004	0.008
A	-0.108	0.010	-10.947	< .001	0.004	3.338	0.005	0.001	0.003	0.007
ES	0.033	0.010	3.286	< .001	0.006	5.204	-0.010	0.002	-0.016	-0.008
FTP	0.063	0.011	5.592	< .001	0.015	13.901				
DV: <b>Risk Behavior</b> F = 100.549 (p < .001), R2 = .089							Indirect Effects Through FTP			
Predictor	B	SE <sub>B</sub>	t-value	p	Raw RW	RS RW %	IE	SE <sub>IE</sub>	95% CI Lower	95% CI Upper
O	0.051	0.013	3.992	< .001	0.001	1.234	-0.037	0.004	-0.046	-0.032
C	0.070	0.016	4.510	< .001	0.005	5.529	-0.132	0.009	-0.159	-0.124
E	0.113	0.013	8.880	< .001	0.007	8.418	-0.019	0.003	-0.028	-0.017
A	-0.180	0.013	-13.752	< .001	0.033	36.698	-0.017	0.003	-0.029	-0.017

ES	-0.051	0.013	-3.840	< .001	0.003	2.911	0.037	0.004	0.033	0.047
FTP	-0.232	0.015	-15.496	< .001	0.040	45.210				

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*Note.* O = openness; C = conscientiousness; E = extraversion; A = agreeableness; ES = emotional stability (low neuroticism). B = unstandardized regression weight.  $SE_B$  = standard error for B. Raw RW = Raw relative weights, which represent the proportion of variance explained in an outcome variable that can be uniquely attributed to each of the predictor variables. RS RW % = rescaled relative weights, which represent the percentage of the variance explained that is accounted for by each predictor variable (i.e., computed by dividing the relative weights by the model  $R^2$ ). IE = indirect effect.  $SE_{IE}$  = standard error for indirect effect. Some caution must be exercised when interpreting the results for happiness and substance use models, as it appears that suppressor effects (i.e., as indicated by “flipped” signs when comparing zero order to partial effects) are present.

Figure 1. Antecedents and outcomes of Future Time Perspective



*Note.* Bold constructs were moderated by at least two of the moderators; moderation could not be tested for the iterative constructs; underlined constructs were not significantly related to FTP.

Figure 2. Graphic representation of zero-order meta-analytic effect sizes

